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ABSTRACT

A microcavity-forming system for making microcavities in a wire (especially a tungsten filament wire). The system has a coating station receiving the wire and applying a polymer coating to the wire. A mask-forming station receives the polymer-coated wire and blows moist air over it to form air bubbles which result in holes in the polymer coating, thereby creating a mask. An etching station receives the wire, as coated with the polymer mask, from the mask-forming station and etches the wire through the holes in the polymer mask to form microcavities in the wire. A stripping station receives the wire from the etching station and removes the polymer mask from the wire, leaving the wire with microcavities. Processes of forming microcavities in a wire and, more generally, of making an etching mask having arrays of holes and conforming to substantially any surface, including an arbitrary curved surface, are provided.